

EXCERPT FROM 2009 AASHTO REPORT

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International Guidelines and Regulations

Queensland, Australia

Of all of the policy documents reviewed for this report, the most comprehensive was that prepared by the Traffic Engineering and Road Safety section of the Queensland (Australia) Government's Department of Main Roads. The purpose of this "Guide to the Management of Roadside Advertising" (TERS, 2002) is to assist the Department of Main Roads and local government agencies in their evaluation of proposals for roadside advertising, to assist in the development of roadside advertising management plans, and to provide information to advertisers to enable them to achieve their goals with a minimal adverse effect on traffic safety and movement.

Unique to the TERS document are a number of operational definitions that serve as a basis for the analysis which resulted in the guidelines and regulations promulgated. For example, four categories of roadside advertising are defined in the report. Given our focus on DBBs, we are concerned only with category 1, which includes "large free-standing devices" such as billboards and trivision signs.

Other key definitions include:

Advertisements are considered to *directly distract* drivers if they convey information that is contrary to or in competition with information conveyed by *important official traffic control devices*.

Important official traffic control devices are major regulatory, warning, or guide signs. For example, an initial regulatory speed sign is considered important, whereas repeater signs are not. The decision as to whether specific TCDs are or are not important is to be made by Main Roads district officers.

Advertisements should not distract drivers in the proximity of *designated traffic situations*, such as “areas in which merging, diverging and weaving traffic maneuvers take place, ‘open’ railway level crossings, road intersection driver decision-making points in the vicinity of important official traffic signs, and reading and interpreting official traffic signs” (p. C-2).

Appendix C to the document, titled “Driver Distraction Potential,” provides a specific and comprehensive series of flow charts (decision trees) and tables that enable an inspector to determine exactly what types and operational characteristics of advertising signs are permissible under different road and speed conditions. The identification of driver distraction potential and the resultant regulations is based on extensive human factors research, experience, and engineering judgment. The stated goal of these regulations is “to ensure that a high level of safety for the road user is maintained by managing competition for drivers’ attention in locations where driving demands are great or where the road authority needs to convey important information to motorists on official traffic signs” (p. C-2).

Different categories of roads are described, with correspondingly different restrictions on advertising signage. For advertising devices beyond the right-of-way but visible from “motorways, freeways, or roads of similar standard,” only non-illuminated signs or non-rotating static illuminated signs are permitted (p. 6-4). Where an advertising device is permitted on State-controlled roads, the same restrictions apply. Further, “variable message signs and trivision signs are not permitted on State-controlled roads” (p. 6-5). For those advertising devices that are permitted, a clear chart is provided (labeled Figure C6) that provides graphic depictions of the “device restriction area” (p. C-12).

In Australia, official signs are placed in accordance with a specific methodology described in the Austroads Guide to Traffic Engineering (AUSTROADS, 1988) which takes into account travel speed, sign content, and legend height. Accordingly, the TERS report identifies “longitudinal exclusion zones,” roadside areas in the vicinity of official TCDs in which advertising devices are not permitted. The length of these exclusion zones is typically $1.2v$ on local streets, and $2.5v$ on multi-lane freeways (where v = speed), and increases to $5.0v$ in advance of on-ramps and $7.5v$ in advance of exit ramps. The report provides specific justification for each recommendation, and that given for ramps is typical:

Estimating the speed of entering traffic on a high speed road is a complex task which requires a fair amount of preview free from extraneous information. The $5V$ requirement

will provide a motorist travelling at 100 km/h with 18 seconds preview time in which to identify an on-ramp and change lanes if necessary. The downstream 2.5V separation distance allows for traffic to stabilize following the merge (p. C-3).

Although not every description is quite so comprehensive, the reader can, nonetheless, understand both the guidelines proposed and the rationale for them.

Sign brightness is discussed in detail in Appendix D, and the rationale for the development of guidelines is based, in part, on the work of Johnson and Cole (1976) who reported that “brightness from illuminated Advertising Devices directed at road traffic should be minimized under all conditions” (p. 20, reported in TERS, 2002).

The authors provide a clear distinction between two often confused key terms - luminance and brightness. Luminance is described as a characteristic of the advertising device itself that is independent of the environment in the vicinity of the sign. Luminance levels may vary across the face of the sign and the direction from which the sign is viewed. It is at a maximum when viewed from a direct frontal position, and falls off (diminishes) as the viewing angle becomes more oblique. Brightness, on the other hand, is a visual sensation experienced by the observer, which is affected by the sign’s luminance (and the uniformity of that luminance across the sign face), as well as by its size, contrast, the viewing position of the observer, and characteristics of the observer him/herself (such as the effect of phototropism [the involuntary movement of the eye toward the brightest points in the field of view]). Since brightness is a subjective value, it cannot serve as a basis for regulation.

The report identifies three different “Lighting Environment Zones,” and Table D1 identifies the maximum average sign luminance permitted in each zone for advertising signs visible from State-controlled roads. The authors state that the maximum levels were established following field investigations in two different areas of the State.

These maximum permitted luminance levels are

In Lighting Environment Zone 1, 500 cd/m²

In Lighting Environment Zone 2, 350 cd/m²

In Lighting Environment Zone 3, 300 cd/m²

for advertising signs of all sizes. Zone 1 is defined as an area with generally very high off-street ambient lighting such as central city locations. Zone 2 means an area with generally medium-high off-street ambient lighting such as major suburban business centers, entertainment districts, and industrial and/or community centers (which may include, for example, large gasoline service stations, parking lots or garages, etc.). Zone 3 is defined as an area with generally low levels of off-street ambient lighting, such as rural and residential areas.

TERS provides a specific methodology for the measurement of luminance against this standard. This methodology is summarized in Section 6 of the present report.

In addressing the characteristics of billboards that may be permitted, the report considers three different location categories:

1. Advertising outside the boundaries of, but visible from, State-controlled roads (except motorways),
2. Advertising visible from motorways, and
3. Advertising within the boundaries of State-controlled roads.

In Category 1, TERS provides an extensive discussion of DBBs, which it refers to as “electronic displays.” It states: “Because electronic displays are conspicuous by design and have the greatest potential to distract motorists, the objective is to limit this potential” (p. 6-3). To achieve this objective, TERS requires that such signs may be installed only where:

- There is adequate advanced visibility to read the sign;

- The environment is free from driver distraction points and there is no competition with official signs
- The speed limit is 80km/h or less
- The device is not a moving sign (defined elsewhere in the document)

TERS further describes acceptable characteristics for signs that display predominantly graphics, with or without text:

- Long duration display periods are preferred in order to minimize driver distraction and reduce the amount of perceived movement. Each screen should have a minimum display period of 8 seconds.
- The time taken for consecutive displays to change should be within 0.1 seconds
- The complete screen display should change instantly
- Sequential message sets are not permitted
- The time limits will be reviewed periodically

Finally, TERS addresses DBBs that contain only text, as follows:

- The number of sequential messages ... may range from one to a maximum of three; in locations with high traffic volume or a high demand on driver concentration, the number of sequential messages should be limited to two.
- Where a display is part of a sequential message set, the display duration should be between 2.5 to 3.5 seconds for a corresponding message length of three to six familiar words.
- The number and complexity of words used ... should be consistent with the display duration.
- The time taken for consecutive displays to change should be within 0.1 seconds.
- The complete screen display should change instantaneously.

- In a text-only display, the background color should be uniform and non-conspicuous.

Advertising Devices beyond the boundaries of, but visible from motorways “are limited to non-rotating static illuminated and non-rotating non-illuminated formats” (p. 6-4). In other words, TERS does not permit changeable message signs, flashing signs, or DBBs of any type if such devices would be visible by motorists traveling on motorways. In addition, no advertising signs of any type (including those that are static, whether illuminated or not) are permitted within the restriction distances discussed above. TERS states: “In addition to the restriction areas . . . further restrictions may apply where Main Roads demonstrates that the traffic conditions require additional driver attention and decision making” (p. 6-4).

Finally, where advertising devices are permitted within the boundaries of State-controlled roads, such signs must be non-rotating static illuminated and non-rotating non-illuminated signs. Neither variable-message signs nor trivision signs are permitted on State-controlled roads.

It is with regard to the flash rate permitted for advertising signs that the TERs report differs most significantly from the prevailing guidance and regulations in the US. The authors explain that flashing illuminated advertising signs have the potential to distract drivers, and that the effects of such flashing signs are described by the *Broca Sulzer Effect* and the *Bartley Effect*. The former states that, at high luminance levels, the momentary luminosity shortly after the onset of a flash appears higher than the luminosity of a steady light of the same luminance. The latter states that, if a light is repetitively flashed, for example between four and ten times per second, the apparent brilliance of the light increases by as much as four to five times the actual luminance.

As a result of their understanding of these two phenomena, the TERS report permits a maximum flash rate of two flashes per second for devices visible from State-controlled roads in Lighting Environment Zones 1 and 2, but prohibits any flashing lights on advertising devices visible to motorists on State-controlled roads in Lighting Environment Zone 3. Flashing signs, or signs with flashing lights, are not permitted within the boundaries of State-controlled roads, nor within or outside the boundaries of motorways, freeways, or roads of similar character if they would be visible to motorists traveling on such roads.

In light of recent proposals from the States of California (Kempton, 2008) and Nevada (Martinovich, 2008) to consider public-private partnerships that might result in advertising on State-controlled roads, the TERS report provides useful guidance for “advertising devices provided as part of sponsorship arrangements” (Appendix A). The report describes a program in which “the Department may permit the erection of Advertising Devices for a defined period in exchange for ... private sector sponsorship of road infrastructure and/or works (p. A-2). Examples of such projects include construction of a pedestrian footbridge over the roadway, roadside landscaping and tree planting, and rubbish removal including removal of illegal Advertising Devices. Project sponsorship must be based on full and open competition, and the project must be warranted in its own right. For sponsorship of “major infrastructure such as pedestrian overpasses,” the Department may permit: “third party advertising on the sponsored structure, on free standing advertising devices, or on existing overhead transport structures within the vicinity of the sponsored infrastructure;” in the case of roadside cleaning and/or landscaping, the Department may permit: “the erection of signs, which contain the sponsor’s corporate logo, designating the start and end of the sponsored section of road” (p. A-3). Graphic examples are provided which depict a fixed sign displaying a corporate name on a pedestrian overpass, and four examples of signs depicting sponsorship of cleaning or landscaping projects, which are quite similar to FHWA’s “acknowledgement signs” (D-14-1, 2 and 3) proposed for the next edition of the MUTCD (Capka, 2005).

The TERS document has also anticipated the growing use of vehicle-based advertising. Traffic Regulation 1962 s. 126 states, in part: “A person shall not, in respect of a vehicle on which or alongside of which an advertisement is being displayed – drive, or permit to be driven, that vehicle on a road or cause or permit that vehicle to stop on a road in such circumstances that the primary purpose for which the vehicle is being driven or stopped at the material time is business advertising, unless the person is the holder of a permit issued by (the Government)” (p. 3-4, 3-5).

In an effort to minimize driver distraction from billboards which contain lengthy or difficult to read messages, TERS suggests that designers of Advertising Devices consider the relationship between legend height, sign content (i.e. number of words) and speed environment that are used in the design of worded traffic signs and that are contained in the AUSTROADS document. TERS states that the applicant’s use of such design guidance “may, in certain circumstances, be considered by the Department in the assessment process” (p. 5-7).

South Africa.

Of the guidelines and regulations identified for the control of outdoor advertising for this report, we found those in South Africa to be quite comprehensive, specific, and, perhaps, the most unusual. Based on a review of practice elsewhere, and reliant to a considerable extent on the work of du Toit and Coetzee (2001) and Coetzee (Undated), the South African National Roads Agency Limited (SANRAL) first issued its “Regulations on Advertising On or Visible From National Roads, 2000” (SANRAL, 2000) to deal with on-premise as well as billboard advertising, and included specific components that address DBBs. The regulations were first issued in July 2000, and were updated and re-promulgated in December of the same year.

SANRAL’s terminology is somewhat different than that in the US, and it is important to understand these differences to ensure that the regulations are not misinterpreted. A “billboard,” for example, may include “variable messages,” and an “electronic billboard” has an “electronically controlled, illuminated display surface which allows all or a portion of the advertisement to be changed, animated or illuminated in different ways”

(p. 4). The term “animated” is used to mean that “the visibility or message of an advertisement is enhanced by means of moving units, flashing lights or similar devices, or that an advertisement contains a variable message” (p. 3) The regulations also distinguish “small” from “large” billboards. For both fixed and electronic displays, any billboard that exceeds 18 square meters in area is considered large. Thus, the majority of roadside billboards in the US would meet SANRAL’s criterion for large (a typical US roadside billboard measures 14 ft x 48 ft, or 672 sq. ft, approximately 62.4 sq. meters. South Africa uses the term “road reserve” to mean essentially the same as “right-of-way” in the US.

Part B of the regulations contains provisions that are applicable to all advertisements. Section 6, Subsection 1 of this Part (excerpted below) identifies outright prohibitions on the grounds of “road safety and traffic considerations” by stating that no advertisement may:

- Be so placed as to distract, or contain an element that distracts, the attention of drivers of vehicles in a manner likely to lead to unsafe driving conditions

- Be illuminated to the extent that it causes discomfort to or inhibits the vision of approaching pedestrians or drivers of vehicles

- Be attached to traffic signs, combined with traffic signs, ... obscure traffic signs, create confusion with traffic signs, interfere with the functioning of traffic signs, or create road safety hazards
- Obscure the view of pedestrians or drivers, or obscure road or rail vehicles and road, railway or sidewalk features such as junctions, bends, and changes in width
- Be erected in the vicinity of signalized intersections which display the colours red, yellow or green if such colours will constitute a road safety hazard
- Have light sources that are visible to vehicles traveling in either direction (p. 12).

Subsection 2 provides guidance for the reviewing agency to use when reviewing applications for advertisements that will face a national road. The Agency must consider each of the following 13 points to determine whether:

- The size of the advertisement, together with other advertisements in the area, if any, will affect the conspicuousness of road traffic signs by virtue of potential visual clutter
- the size of the advertisement, or any portion thereof by way of its colours, letter size, symbol, logo, graphics or illumination, will result in the advertisement having a distracting effect on the attention of drivers of vehicles to the task of driving and lead to unsafe driving conditions
- the number of road traffic signs and advertisements in any area constitute a driving hazard, due to the attention of drivers of vehicles being deviated from the task of driving and leading to unsafe driving conditions
- the colour, or combination of colours, contained in the advertisement correspond with the colours or combinations of colours specified for road traffic signs in the regulations promulgated under the National Road Traffic Act
- the speed limit, and the measure of the traffic's adherence thereto, the traffic volume, the average following headway and accident history of the road demand more stringent control of outdoor advertising
- the amount of information contained in the advertisement, measured in bits, is within prescribed limits
- the advertisement is suitably positioned and orientated

- the position of the advertisement will negatively affect the visibility of, sight distance to or efficiency of any road traffic sign, or series of such signs
- the advertisement could be mistaken to represent a road traffic sign
- the illumination of advertisements is likely to distract drivers' attention from road traffic signs which are not illuminated
- the position of an advertisement would disrupt the flow of information from road traffic signs to drivers who encounter a series of road traffic signs intended for traffic regulation, warning or guidance, in cases where the applicable speed limit on the road exceeds 60 km per hour
- the position of any advertisement would potentially distract drivers' attention at places where traffic turns, negotiates curves, merges or diverges, or in the area of intersections or interchanges, or where drivers' uninterrupted attention to the driving task is important for road safety
- The distance of any advertisement before any road traffic sign, an advertisement's position in between road traffic signs or an advertisement's distance behind any road traffic sign is of such a nature as to distract a driver's attention from any road traffic sign (p. 12-13).

Many of these requirements and review criteria in the two categories discussed above are also used in other jurisdictions. In our opinion, some, including some of those in broad use, are somewhat vague and might be subject to differing interpretations. A third group category of SANRAL regulations, however, provides a unique and potentially useful approach to DBB guidance or regulation in the US. Specifically, those requirements that address the “flow of information from road traffic signs to drivers” and the “amount of information ... measured in bits” contained within an advertisement have direct relevance to traffic safety and are firmly grounded in human factors research.

The Agency is given additional authority to “increase the minimum spacing between advertisements or place further restriction on the position, size and content of any advertisement it considers necessary, in the interest of road safety” (p. 13).

Where SANRAL’s safety review criteria break new ground, however, is in two key areas that focus on the driver’s information processing demands and limitations. Specifically, two of the review criteria above address the placement and content of the advertisement

in terms of the amount (bits) of information contained on the sign, and the potential for the sign to cause disruption of the flow of information to the driver.

From a regulatory perspective these two evaluation criteria are unique. They are explained below.

Part B, Section 6, Subsection (f) requires that “the amount of information contained in the advertisement, measured in bits, is within prescribed limits” (p. 13). These limits are defined in Section 8, “Advertisement to be concise,” which states, on page 14, that an advertisement visible from a national road must be concise and legible and comply with the following requirements:

- (a) No advertisement displaying a single message may exceed six bits of information in a visual zone and 10 bits on a road other than a freeway;
- (b) No combination sign, or any other advertisement displaying more than one advertisement or message, may contain more than six bits of information per enterprise, service or property, or per individual advertisement or message displayed on a combination sign;
- (c) Numbers longer than eight digits are not allowed;
- (d) A street number indicating specific premises must have a minimum size of 150 millimeters and a maximum size of 350 millimeters;
- (e) No message may be spread across more than one advertisement.

With the exception of item (d), which refers only to address numbers, and item (e), which relates to what we have called message sequencing and is discussed elsewhere in the present report, each of the requirements above impose an upper limit on the number and length of words, numbers, symbols, etc., that can be displayed on a roadside advertisement.

A “bit” of information is defined in Part A, Section 1 of the regulations as “the basic unit for measuring the length of advertising messages and may consist of letters, digits,

symbols, logos, graphics, or abbreviations” (p. 4). Bits are operationally defined in accordance with the following table:

Information on Billboard	Number of bits
Words of up to 8 letters	1.0
Words of more than 8 letters	2.0
Numbers of up to 4 digits	0.5
Numbers of 5 to 8 digits	1.0
Symbol or abbreviation	0.5
Large logo and graphics	2.0

The term “bit,” a contraction of the words binary digit, was first used in the 1930s in a paper describing information storage for early computers. In the decades since, it has also been widely used in the science of information processing and human cognition. A further discussion of the term “bit” is beyond the scope of this paper.

In addition to its regulatory control on the amount of information that can be displayed on billboards, SANRAL also controls the placement of billboards with regard to official signs, in a manner that goes beyond other Government agencies. Specifically, Regulation 6(2)(k) states:

In considering applications for approval . . . the Agency must evaluate whether . . . the position of an advertisement would disrupt the flow of information from road traffic signs to drivers who encounter a series of road traffic signs intended for traffic regulation, warning, or guidance. . . (p. 13).

In essence, this regulation recognizes that there are categories of official signs in which the information on two sequential signs was linked, and that this information link must not be disrupted. An example given by du Toit and Coetzee is the link between an advance warning sign at an interchange and the actual off ramp. Other examples might include advanced signs for changes in speed limit or for the presence of a Stop sign or traffic signal. Although the South African Road Traffic Signs Manual (SARTSM) recognizes that a 200 m spacing is between two sequential road signs for 120 km/h roads in general, it requires 360m as a minimum distance on such a road for a motorist to react to a warning or information sign in advance of an interchange where lane changes and weaving may be necessary. SANRAL determined that the presence of a billboard between the advanced (1km) interchange signs and the off ramp would reduce this

distance below acceptable limits. As a result, the requirement was established that no billboards would be permitted between the 1km advance sign and the gore of the subsequent interchange. This would permit the motorist to safely read and react to the 500m off ramp sign. In addition, because a freeway road sign is typically readable at 200m before the sign, the regulations prohibit billboards closer than 1.2km upstream of the interchange. In short, no billboards are permitted within 1.2km of an interchange, thus preserving sufficient time for motorists to read and respond to advanced warning or information signs (located 1km in advance of the gore), and ensuring that the flow of information between the advanced sign and the actual interchange sign, whose function is linked, is not disrupted.

During their evaluation of the efficacy of the regulations, du Toit and Coetzee (2001) reviewed billboard applications for 248 signs. (Each face of a two-face sign counted as one). Of the 86.7% of the signs that were rejected, 40.8% (the largest category) were rejected for being too close to existing official road signs, 20% were rejected for disruption of the flow of information to the driver, and 7.5% were rejected because they were too close to a ramp gore.

Victoria, Australia.

The State of Victoria specifies a “ten-point road safety checklist” which describes conditions under which it may consider any roadside advertising to be a road safety hazard. These ten points, which are broadly in use elsewhere, defines an advertisement as a road safety hazard if it:

1. obstructs a driver’s line of sight at an intersection, curve or point of egress from adjacent property
2. obstructs a drivers view of a traffic control device, or is likely to create a confusing or dominating background which might reduce the clarity or effectiveness of a traffic control device
3. could dazzle or distract drivers due to its size, design or colouring, or it being illuminated, reflective, animated or flashing
4. is at a location where particular concentration is required (e.g. high pedestrian volume intersection)
5. is likely to be mistaken for a traffic control device, for example, because it contains red, green, or yellow lighting, or has red circles, octagons, crosses or triangles, or arrows

6. requires close study from a moving or stationary vehicle in a location where the vehicle would be unprotected from passing traffic
7. invites drivers to turn where there is fast moving traffic or the sign is so close to the turning point that there is not time to signal and turn safely
8. is within 100 metres of a rural railway crossing
9. has insufficient clearance from vehicles on the carriageway
10. could mislead drivers or be mistaken as an instruction to drivers

As discussed by the Road Safety Committee of the Parliament of Victoria (2006), only one of the items in this checklist includes numerical criteria, “making the application of the other criteria wholly subjective” (p. 113).

Of greater specificity, and of more direct relevance to the current project, the State also includes “operational requirements for the installation of Variable Advertising Message Signs” (VicRoads, 2005, cited in Road Safety Committee (2006). These requirements state that such a sign must:

- Not display animated or moving images, or flashing or intermittent lights
- Not be brighter than 0.25 candela per square metre
- Remain unchanged for a minimum of 30 seconds
- Not be visible from a freeway
- Satisfy the ten point checklist

The regulations in place in Victoria are also based, to some extent, on the work of Cairney and Gunatillake (2000), who reviewed the literature and made recommendations for policy, on behalf of the Royal Automobile Club of Victoria (RACV).

New South Wales (NSW), Australia.

In its report for the Government of New South Wales, Transportation Environment Consultants (TEC, 1989) prepared a series of suggested guidelines for the control of roadside advertising signs located within the road reserve. The principal recommendations for electronic variable message signs on conventional roads and on freeways are shown in the table below:

Standard	Roadside –		Overpass	Freeways
	Urban	Rural		
Minimum message on-time	2 minutes	2 minutes	2 minutes	2 minutes
Minimum message off-time	2 minutes	2 minutes	2 minutes	2 minutes
Maximum Changeover time	<0.1 sec	<0.1 sec	<0.1 sec	<0.1 sec
Minimum distance to traffic signal	12 m	20 m	30m	NA
Minimum distance to lane drop, official traffic sign, ramp, merge	10m	15m	25m	150m
Minimum distance to another	7m	10m	20m	150m

Advertising device

The TEC report also provided guidance for the maximum luminance levels of illuminated advertising devices; their recommendations were based on a report by the Public Lighting Engineers in the UK (1981, cited in TEC, 1989).

Four lighting zones were classified, generally as follows:

Zone 1: areas with very high off-street ambient lighting, e.g. central city locations

Zone 2: areas with medium-high off-street ambient lighting such as shopping/commercial/industrial/community centers, car sales yards, car parks, larger petrol stations, etc.

Zone 3: areas with low-medium off-street ambient lighting, e.g. areas with rather isolated small shopping/commercial/industrial/community centres.

Zone 4: areas with low levels of off-street ambient lighting; e.g. most rural areas, many residential areas.

For advertising signs with an illuminated area of more than 10 square meters, the maximum recommended lighting levels (expressed as cd/m^2), are 1200 in Zone 2, 800 in Zone 3, and 400 in Zone 4. There is no limit in Zone 1. Note that the most common billboard size in the US is 14 ft. x 48 ft., which, at 672 sq. ft. places US billboards into the largest sign category cited in these guidelines.

The Netherlands.

TNO was recently asked to develop guidelines and “decision criteria” to be used by the Dutch Ministry of Transport, for visual distracters that presented “non-driving related information” (Martens, 2009). Distracters to be considered might be any types of roadside objects, including, but not limited to, billboards. The guidelines were to be developed using existing human factors knowledge and principles (i.e. no new research was to be conducted). The guidelines will be initially applied to motorways, with later extension to other roads in The Netherlands.

The initial work has led to the following recommendations:

- There should be no information that actively attracts attention; this includes no moving objects, no LCD or LED screens, and no moving or changing pictures or images.
- Non-driving related information should not appear within the driver’s central field-of-view (less than 10 deg from straight ahead). Based upon an assumption of 300m sight distance, traversed at +/- 9 sec, this results in a prohibition of such signs within 50m of the road edge. Any sign within that boundary must be “extremely simple” and no billboards are permitted.
- Assuming a 150m legibility distance, and a maximum permitted sign reading time of 4 sec (presuming multiple glances may be needed) the guidelines suggest that signs contain a maximum of five “items” (letters, numbers, symbols, etc.). This is based on application of the following “reading time formula:”

$T = N/3 + 2$, where T = sign reading time, and N = number of items

- No distractions should be permitted at merges, exits and entrances, close to road signs or in curves (specific constraints will follow)
- No telephone numbers will be permitted
- No fluorescent colors are permitted
- No ambiguity is permitted
- No controversial information is permitted; examples include sex, violence, religion, nudity
- No mixture of real and fake words is permitted.
- Commercial signs must be 90 deg to the road to minimize head turning
- No signs will be permitted that mimic road signs in color or layout

The rules will be contained in a decision tree format, and specific rules will apply to different categories of roadside distracters, including such diverse features as: buildings, objects of art, wind turbines, information signs and safety campaigns, billboards and other advertisements, tunnels, bridges and walls, airfields, skydive centers and heli platforms. The guidelines are expected to be ready for field testing and validation by mid-2009. Once adopted, software will be developed that will simply take an inspector through the decision process.

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